

No. 690,752.

Patented Jan. 7, 1902.

W. B. McCORD.
TUBULAR BOILER.

(Application filed Sept. 5, 1901.)

(No Model.)

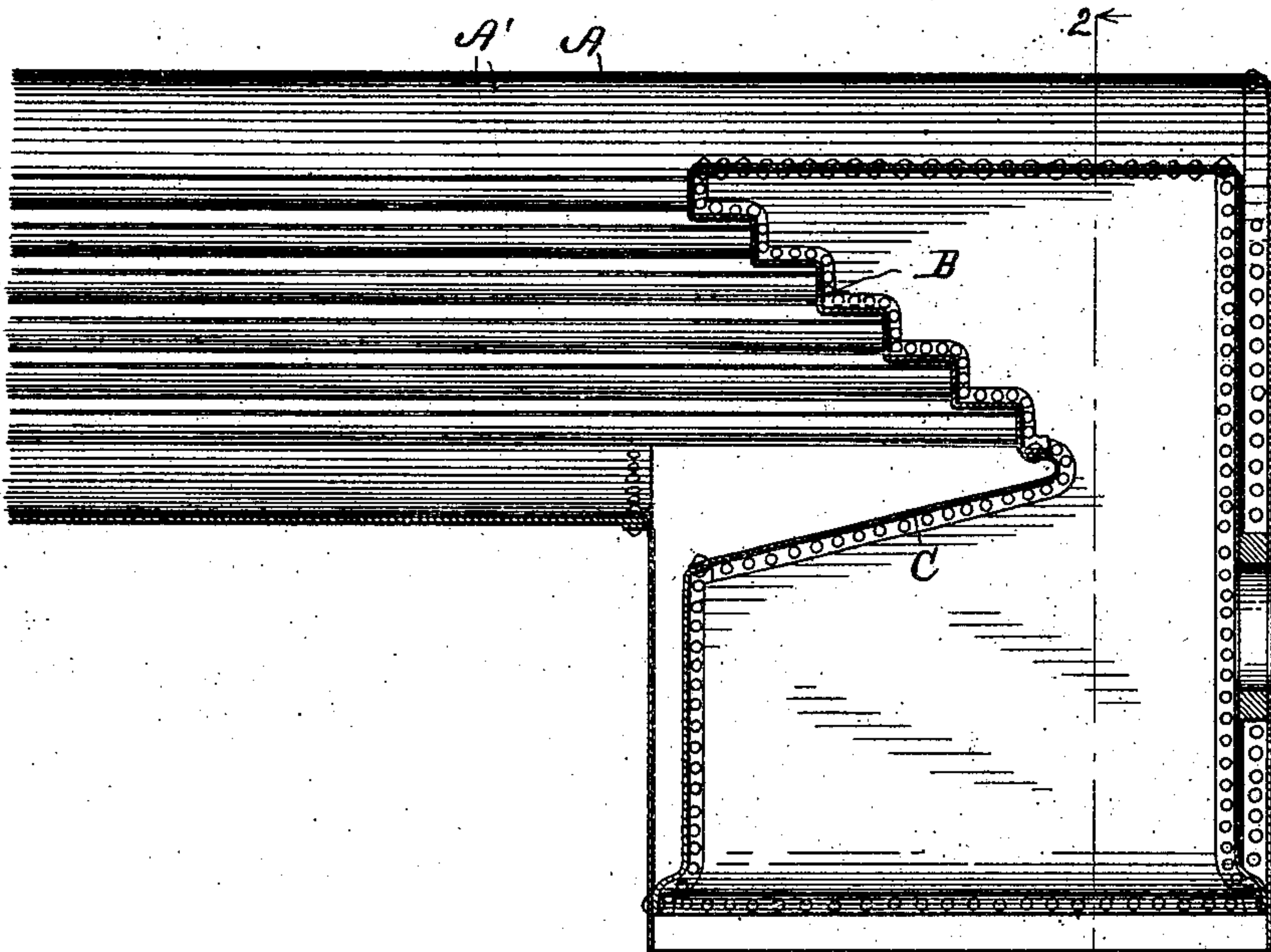


Fig. 1

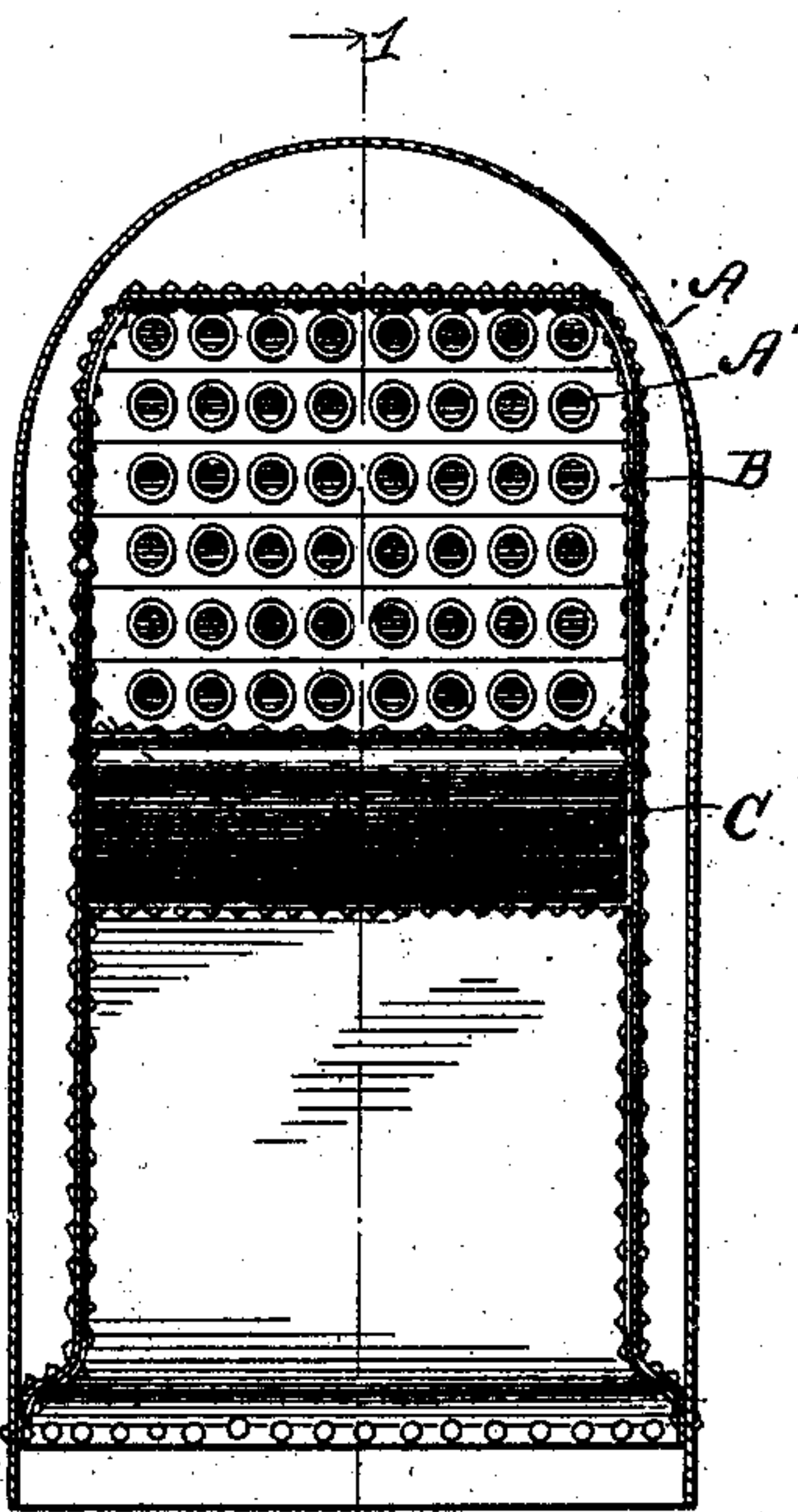


Fig. 2

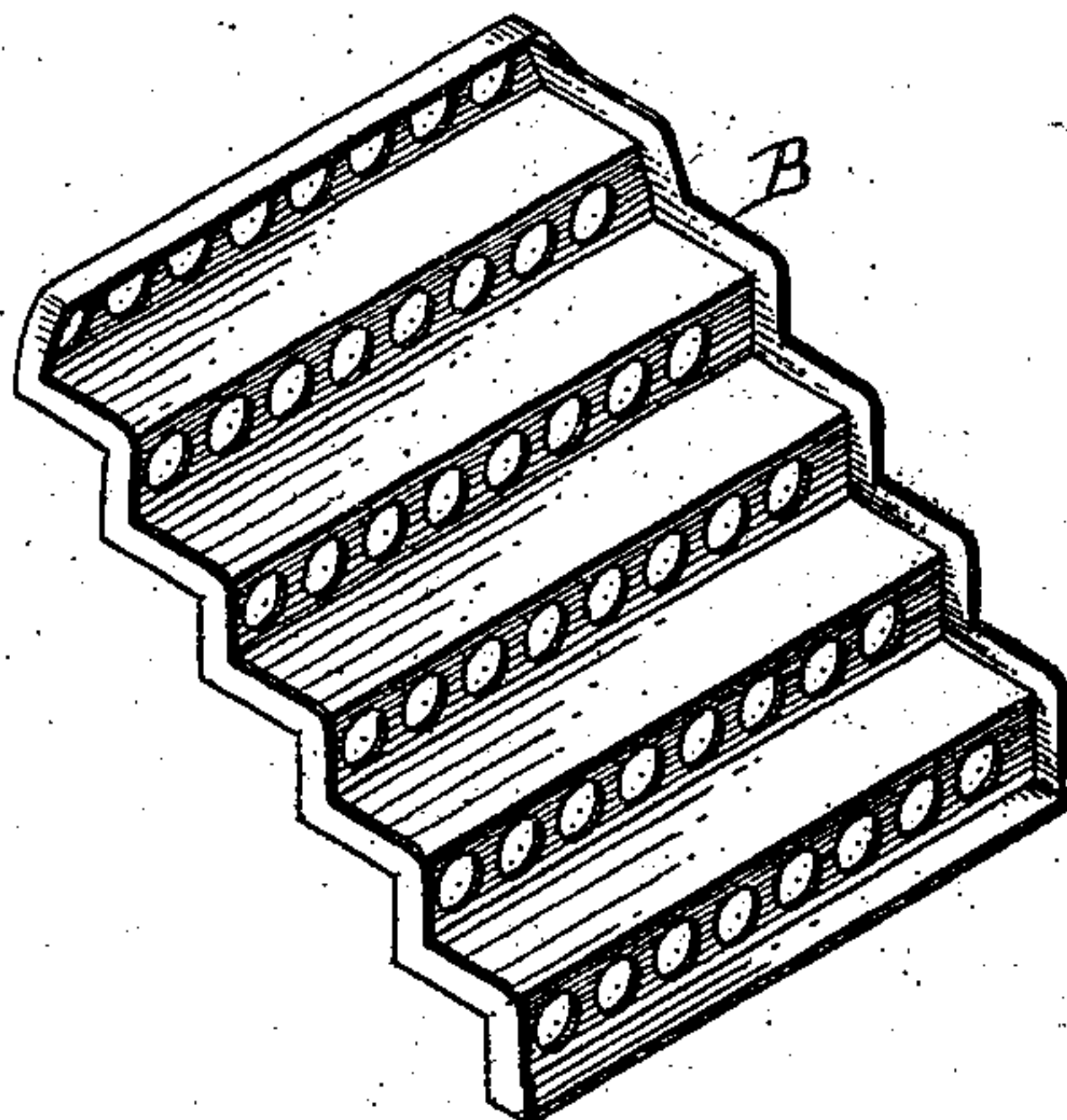


Fig. 3

Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM B. McCORD, OF BATTLECREEK, MICHIGAN.

TUBULAR BOILER.

SPECIFICATION forming part of Letters Patent No. 690,752, dated January 7, 1902.

Application filed September 5, 1901. Serial No. 74,429. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM B. McCORD, a citizen of the United States, residing at the city of Battlecreek, in the county of Calhoun and State of Michigan, have invented certain new and useful Improvements in Tubular Boilers, of which the following is a specification.

This invention relates to improvements in tubular boilers.

In tubular boilers as heretofore constructed much loss has been occasioned by the tubes or flues being burned off or destroyed at the point where they are secured to the rear wall or flue-plate of the fire-box. When this occurs, the flues must be removed and a piece welded on or new tubes substituted.

The objects of the invention are, first, to provide a structure in which the ends of the flues of the boiler at the point where they are to be connected to the flue-plate of the fire-box shall be protected as much as possible; second, to provide a structure in which, should the ends of the flues become destroyed or loosened from the tube-plate of the fire-box, the same may be cut off and again utilized in the same boiler, and, third, to provide in a tubular boiler a structure which shall utilize the maximum of heat and at the same time protect the tubes or flues from the effect of the same.

Further objects will definitely appear in the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in this specification. The invention is clearly defined and pointed out in the claims.

A structure embodying the features of my invention is fully illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a detail longitudinal sectional view of a tubular boiler embodying the features of my invention, taken on line 1 1 of Fig. 2, the flues being shown in full lines. Fig. 2 is a detail cross-sectional view of the same, taken on line 2 2 of Fig. 1. Fig. 3 is a perspective view of the flue-plate B.

In the drawings all of the sectional views are taken looking in the direction of the little arrows at the ends of the section-lines, and

similar letters of reference refer to similar parts throughout the several views.

Referring to the lettered parts of the drawings, A represents a boiler-casing of the usual construction, A' the flues arranged therein. B is the flue-plate or plate to which the flues are secured at the fire-box end of the same.

C is a plate which is connected to the rear wall of the fire-box and extends forwardly and upwardly and is connected to the bottom of the flue-plate B. These plates are connected to the walls of the fire-box, which are of the usual construction, in the usual manner. The flue-plate B is formed into a series of steps and is arranged to extend rearwardly and upwardly, so that when the tubes are secured to the same in the series each series varies in length, the shorter ones being at the top. When arranged in this manner, the flue-plate and flues are protected from the direct heat of the fire-box by the plate C, which receives and deflects the heat forwardly and upwardly where it passes into the flues. It will be noted that this structure also increases the extent of the boiler contact with the fire-box. The draft capacity of the flues is somewhat increased. When the flues become burned off, instead of welding on a piece or substituting new flues in order to repair and replace the same, as is now the practice, the injured end of the flues may be cut off and made use of in a shorter series in the same boiler. This results in a great saving in material and time in making repairs. This protection of the flue-plate also prevents to a large extent the expansion of the same, due to direct effect of the heat, as in the usual construction.

I have described and illustrated my invention in detail in the form I believe to be the most practical and simple in construction. However, I desire to state that I am aware that it is capable of considerable variation without departing from my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a tubular boiler, the combination of a boiler A; a fire-box arranged in connection therewith; tubes or flues A'; a tube-plate B, secured to the walls of the said fire-box and arranged in a series of upwardly and rear-

wardly extending steps to which the said tubes or flues are united; and an upwardly and forwardly extending plate C secured to the walls of the said fire-box and to the said
5 flue-plate, all coacting for the purpose specified.

2. In a tubular boiler, the combination of a boiler; a fire-box arranged in connection therewith; tubes or flues for said boiler; an
10 upwardly and rearwardly extending flue-plate secured to the walls of the said fire-box to which the said tubes or flues are united; and a forwardly-extending plate secured to the walls of the said fire-box and to the said

flue-plate, all coacting for the purpose specified. 15

3. In a tubular boiler, the combination of a boiler, flues of different lengths and an upwardly and rearwardly extending flue-plate with step formation for the said flues of different lengths. 20

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

WILLIAM B. McCORD. [L. S.]

Witnesses:

ALICE E. HOUGHTON,
OTIS A. EARL.